

DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
YELLOWSTONE NATIONAL PARK
YELLOWSTONE PARK, WYO.

CE OF THE SUPERINTENDENT

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MONTHLY REPORT

for

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MONTHLY REPORT

1920.

December

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Notes from Park Naturalist, electrician, and painter
attached.

Mr. Lindaley.

DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

YELLOWSTONE NATIONAL PARK

YELLOWSTONE PARK, WYO.

OFFICE OF THE SUPERINTENDENT

January 9, 1921.

Dear Sir:

The following is report on conditions in Yellowstone National Park, and on the operation of the park, for the month of December, 1920:

GENERAL CONDITIONS:

The monthly mean temperature at Headquarters (Mammoth) was 21.7, a departure from normal of plus 0.1. Moderate temperature prevailed, as a rule, throughout the month. The coldest day was on the 15th, with a minimum of -9° , it being the only day on which the temperature fell to zero. The maximum temperature of 48° on the 1st is the highest December temperature of record for the past 34 years. However, a temperature of 47.5° was recorded in 1906.

Precipitation records showed a total of 1.26 inches. Departure -0.56 inch. There were 17 days with a measurable amount of precipitation.

The total snowfall was 14.4 inches. Normal 14.3. Snow, mostly light, occurred on 24 days during the month. The greatest depth on the ground was 9.0 inches on the 27th, while at the end of the month there were 8.6 inches. The average depth of snow on the ground on December 31st for the past seventeen years is 7.0 inches. The following table shows depth of snow at the end of December at various stations in the Park:

Station

10 1/2	Mammoth,	9 to 22 inches.
24	Norris,	18 to 24 inches.
	Madison Junction,	20 to 30 inches.
36	Riverside,	20 to 30 inches.
	Gallatin,	24 to 40 inches.
	Beckler,	24 to 60 inches.
50	Snake River,	36 to 50 inches.

should
have been
described
as

Station

40	Thumb,	36 to 50 inches. ✓
41	Lake,	36 to 45 inches.
	Upper Yellowstone	
	Thoroughfare,	36 to 60 inches.
	Sylvan Pass,	24 to 36 inches.
50	Canyon,	40 to 50 inches.
	Tower Falls,	18 to 24 inches.
	Buffalo Ranch,	8 to 12 inches.
	Soda Butte,	24 to 30 inches.
	Hellroaring,	8 to 14 inches.
	Crevice,	24 to 36 inches.

The total wind movement was somewhat below normal, but the maximum velocity of 42 miles from the southwest on the 10th has not been exceeded during the past 18 years.

Sunshine; Percentage of possible, 31. Normal, 41%. Much cloudiness prevailed during the month, there being 21 cloudy days. With the exception of 25 recorded in 1917, December of this year has the greatest number of cloudy days since the record began in 1903.

The Monthly Meteorological Report furnished by the local U.S. Weather Bureau is enclosed herewith.

The very mild weather conditions which prevailed throughout the month were most favorable to the wild animals which were dependent upon the grass on the range for subsistence. The elk and deer were able to get all they needed in the park, and their failure to go out was a great disappointment to the hunters who came to Gardiner and vicinity to take advantage of the extremely long open season in Park County, Montana, and get their elk, and they became discouraged and left before the close of the season, December 24th.

The only roads open to general travel throughout the month were the Gardiner-Mammoth road and the road to Cooke, Montana, via Tower Falls and the Buffalo Farm. Motor vehicles were used all the month to Mammoth, but had to be abandoned on the Cooke road on December 10th and teams substituted.

The saddle and pack horses were brought in from the Western District on December 2nd, and patrols have since been made on skis or snowshoes. Saddle horses were used throughout the month for making patrols on the north line, including the Gardiner, Crevice, Tower Falls, and Soda Butte Districts. It was possible to get over the Morris road as far as Willow Park with team and sleigh up to nearly the end of the month, and they can still be used as far as Golden Gate, about four miles.

Yellowstone Lake froze over on December 20th. The gauge at its outlet showed the water to be one inch lower on December 31st than it was at the close of November.

Travel.

The Chief Ranger's Travel Report for the month is enclosed. The few who entered came via the northern gateway and only came as far as Headquarters.

Labor and Supply Market.

There was no demand for labor as there was nothing going on in the park except usual winter duties of maintenance of buildings and repairs to equipment, which was done by regular annual employees.

The only supplies of any consequence purchased consisted of our regular supply of coal, which was purchased at the same price as has prevailed since October 1st.

II. PERSONNEL.

Employees.

On December 1st there were 68 employees on duty under this office, but by December 31st, there were but 65 so employed.

The following list shows number of employees of various classes serving under appointment during the month, with general statement of the kind of work performed:

<u>No.</u>	<u>Class</u>	<u>Kind of work performed.</u>
✓ 2	Aest. Engineers	Making surveys and office engineering. <i>+ filing + cataloguing records</i>
✓ 3	Clerks	1 disbursing agent and purchasing clerk; 1 stenographer-typist on orders, proposals, and vouchers; 1 stenographer-typist on files and stenographic work. <i>1 clerk on cost account and proposals</i>
✓ 2	Electricians	Read meters; did necessary line work, and operated power plant regular shifts, including Sundays.
1	Foreman	In charge of stables at headquarters. <i>+ putting up ice</i>
✓ 1	Telegraph Operator	Sent and received all Government Western Union messages; operated one shift on telephone switchboard.

<u>No.</u>	<u>Class</u>	<u>Kind of work performed.</u>
✓ 1	Telephone Switch-board Operator	Operated telephone switchboard, daily shifts, including Sundays.
✓ 1	Master Mechanic	In charge of shops, and of repairs to heavy road machinery.
✓ 1	Blacksmith	General blacksmith work, including shoeing horses in shop and in the field for crews; overhauling and repairing tools and equipment.
✓ 1	Steward and Master of Transportation	In charge of all transportation and of storehouses. <i>On Cars Since Noon Dec 30</i>
✓ 1	Painter	Renovated quarters at headquarters, also painted signs and equipment.
✓ 1	Lineman	In charge of telephone and telegraph system. Did emergency work and installed instruments. <i>Moved Storeroom</i>
✓ 7	Laborers	Teaming, freighting, work in warehouse, and miscellaneous work at Headquarters. <i>putting up ice</i>
✓ 1	Handyman	Worked in storehouse issuing and receiving supplies. <i>Assisting in</i>
✓ 1	Buffalo Keeper	In charge of tame buffalo herd.
✓ 1	Asst. Buffalo Keeper	Assisting buffalo keeper.
✓ 1	Park Naturalist.	Scientific research work.
✓ 1	Plumber	In charge of general plumbing and repairs to same at headquarters.
✓ 1	Motorcycle Mechanic	Repairing motorcycles. <i>Resigned 1/1</i>
✓ 2	Automobile Mechanics	Repairing motor trucks and touring cars. <i>Jan 24, 1921</i>
✓ 1	Watchman	Made hourly patrols during night at Headquarters; took care of office, and kept furnace going during the night.
✓ 1	Carpenter	Repaired buildings at Headquarters. <i>overhauled equipment in shops</i>
✓ 1	Chief Ranger	In charge of Ranger force.
✓ 3	Asst. Chief Rangers	1 in charge of <i>Northern</i> district; 1 in charge of western district; <i>transferred to G-2 Jan 15, 1921</i> 1 on time keeping and cost accounting in office of Chief Clerk.

<u>No.</u>	<u>Class</u>	<u>Kind of work performed.</u>
6	First-class Park Rangers-	In charge of ranger stations and making patrols.
16	Park Rangers	In charge of ranger stations, doing patrol work, etc. 1 in charge of southern district as Acting Assistant Chief.
3	Temporary Park Rangers-	Doing regular patrol work. 1 assisting in Chief Ranger's Office.
1	Fireman	In charge of furnaces at headquarters.

In addition to the regular employees listed above under appointment, the following were employed temporarily by the day:

	<u>On Dec. 1st</u>	<u>On Dec. 31st.</u>
Laborers	3 /	1 3
Skilled Laborers	<u>1</u>	<u>0</u>
	4	1

Leaves of Absence.

During December annual leaves of absence were granted as follows:

Lewis L. Hill,	Asst. Engineer,	3 days - Dec. 1-3
George T. Dustman,	Asst.Chf.Prk.Ranger,	2 " - Dec. 2-3
E.A. Allen,	Lineman,	8 " - Dec. 3-11
Burton C. Lacombe,	Buffalo Keeper,	$\frac{1}{2}$ " - Dec. 11(noon)-11
Helen E. McNutt,	Stenog.-Typist,	1 " - Dec. 10-10
A.C. Neumann,	Painter,	2 " - Dec. 10-11
George T. Dustman,	Asst.Chf.Prk.Ranger,	$\frac{1}{2}$ " - Dec. 11(noon)-11
Harry R. Marshall,	Automobile Mechanic,	2 " - Dec. 8 (noon)-10(noon)
Warren Hutchings,	Asst.Buffalo Keeper,	2 " - Dec. 11-13
Harry R. Marshall,	Automobile Mechanic,	10 " - Dec. 14(noon)-27(noon)
Helen E. McNutt,	Stenog.-Typist,	1 " - Dec. 18-18
George T. Dustman,	Asst.Chf.Prk.Ranger,	$\frac{1}{2}$ " - Dec. 17(noon)-17
A.C. Neumann,	Painter,	2 " - Dec. 23-24
Charlie R. Stinnett,	Blacksmith,	2 " - Dec. 23(noon)-27(noon)
Roy K. Gray,	Laborer,	1 " - Dec. 23(noon)-24(noon)
William Wiggins,	Plumber,	$4\frac{1}{2}$ " - Dec. 20(noon)-24
J.H. Dupuis,	Park Ranger,	$3\frac{1}{2}$ " - Dec. 28(noon)-31
Lewis L. Hill,	Asst. Engineer,	$5\frac{1}{2}$ " - Dec. 24(noon)-Jan.2
E.S. Bowman,	Park Ranger,	3 " - Dec. 29-31
John Delmar,	Steward & Master of Transportation,	$1\frac{1}{2}$ " - Dec. 30(noon)-31

Appointments.

Dec. 1:	Charlie R. Stinnett,	Blacksmith,	\$1320 p.a., Probationary.
Dec. 1:	Thomas Farrell,	Fireman,	\$100 per month. Temporary.
Dec. 1:	Fred L. Bonnell,	Laborer,	\$1080 p.a.
Dec. 1:	C.D. Newman,	"	\$1080 p.a.
Dec. 1:	George McFarland,	"	\$1080 p.a.
Dec. 1:	Daniel W. Tripp,	"	\$1080 p.a.
Dec. 1:	Roy X. Gray,	"	\$1080 p.a.
Dec. 1:	Clarence Scoyen,	"	\$1080 p.a.
Dec. 1:	John W. McDonald,	"	\$1080 p.a.

III. WORK COMPLETED:

(a) Construction of Physical Improvements.

There was no construction work in progress during the month of December. The statement in the November report to the effect that the work on the Buffalo Fork Bridge had been completed in November was confirmed by a letter, dated December 8, 1920, from the District Engineer, U.S. Bureau of Public Roads, Denver, Colorado, recommending that the work be accepted and enclosing a letter from Highway Engineer R.B. Mackenzie, dated December 4th, saying that the bridge had been completed according to plans and specifications. This recommendation was favorably acted upon and vouchers to cover the payments under the contract are being prepared.

(b) Maintenance and Repair of Physical Improvements.

All work accomplished by the permanent winter force at Headquarters is included under Section IV in another part of this report.

(c) Miscellaneous Improvement Work.

(d) Service to the Public.

There is nothing of consequence to report under this heading as the park was not open to tourist travel. The few who entered, as indicated by the Chief Ranger's Travel Report for December, made short trips to Mammoth from the northern entrance.

Information Service: Fifteen letters were prepared and sent out in answer to questions of a technical character, and much research work was done in preparation for the coming season. In addition to this, about the usual number of requests for information relative to securing work in the park for next season were received and answered, mostly by referring the applicants to the Hotel Company, the Camps Company, or the Transportation Company, depending upon the tone of the application.

IV. WORK IN PROGRESS.

(a) Construction of Physical Improvements.

There is nothing to report under this head for December.

(b) Maintenance and Repair of Physical Improvements.

No crews were maintained in the field during the month. The shop force was engaged during December in the work of overhauling and repairing motor vehicles, including motor-cycles; also gravel loaders and other heavy road machinery; also smaller tools that have been broken in service and can be repaired by furnishing new handles or other parts. Their work included the completion of the overhauling and remodeling of the 2-ton Reo Truck into a truck for the special work of hauling gasoline, which is now ready for the painter; also overhauling the special snowplow used ahead of the caterpillar tractor for clearing the roads of snow, and making some improvements to it so it would be available in case a severe storm blocked the road between Mammoth and Gardiner, which must be kept open even during the winter. The new "Marvel" machine for reboring cylinders was installed and placed in service in the machine shop. This machine will repay its cost in a very short time, as most of our motor vehicles are old and need reboring, and the cost of reboring in our own shops is very slight.

The plumber did the usual repair work and cared for the extensive water and sewer system at Headquarters, which requires constant attention in cold weather.

The carpenter did several necessary repair jobs in living quarters of employees, and did the wood work incident to the repair of tools and equipment in the shops.

The electricians and linemen together made usual necessary repairs to wiring and instruments, replaced broken lights in buildings and streets, read meters, and operated the power plant twenty hours daily, except on Sundays and holidays, when the hours were shortened to about twelve hours per day. The hydro-electric power plant generated a total of 12,370 kilowatt hours of electric current during the month. Of this, 1,174 kilowatt hours were sold to park utilities at the authorized rate of 5¢ per kilowatt hour; 1,253 kilowatt hours were consumed for street lighting, and the balance of 9,943 kilowatt hours were consumed in lighting government buildings, supplying power to our shops, and wasted on the power lines. The peak load for December was 34 kilowatts.

The painter put in practically the whole month renovating employees' living quarters, completing two rather extensive jobs in this line.

The transportation and storehouse men were busy straightening up and moving storehouses preparatory to taking an inventory, and handling the few supplies that came in during the month. One job which takes a large part of their time is the unloading of coal and hauling it from the depot at Gardiner. This comes in carload lots and it requires quick work to unload a car in time so there are no demurrage charges. The hauling conditions were excellent during December, as the weather was mild and the roads open throughout the month.

The stable foreman made considerable progress repairing tents when not busy with routine work incident to headquarters, corral, and hauling coal.

The ranger force put in a very strenuous month affording special protection to the wild animals, especially the elk along the north line, preventing them from going across the line into Montana where they could be killed in Park County, up to include December 24th, without violating the game laws of the State. By very hard work and concentration on the main points where the elk were likely to go out, they were very successful, and the number killed by hunters during the season was of no consequence. More of the details of this work are given under a separate heading.

Assistant Chief Park Ranger Harry Trischman made necessary repairs to the Hellroaring Snowshoe Cabin, which was in use almost constantly by rangers looking after the north line and the elk herds.

The two assistant engineers devoted most of the month to working up in the office the data secured in the field during the previous months. They were obliged to work until late in the night for several nights to prepare the data needed by Superintendent Albright in Washington in connection with the estimates for next year. Assistant Engineer Hill made a trip to Canyon on skis, December 15th to 21st, to secure additional surveys and notes on proposed retaining walls and guard rails to be erected along the Yellowstone River just above the Upper Falls.

The office force was busy from 8:30 A.M. to 5:30 P.M. on routine work, vouchers, cost accounts, straightening up files for the year, posting up scrap books to date, etc.

All of these activities were more or less hindered by the taking of leaves of absence by various employees, as their services can be spared better in winter than in summer.

Improvements by Park Utilities.

The Yellowstone Park Hotel Company had no one at work in the park during the month, except the winter keepers at Mammoth, Upper Basin, Lake Outlet, and Grand Canyon.

The Yellowstone Park Transportation Company employed one man at Mammoth, who looked after the buildings and ran the daily bus to the depot to connect with the train from Livingston and carry the mail. Four painters were also engaged in painting automobiles.

The Yellowstone Park Camps Company retained one mechanic and a driver at Mammoth, who were engaged in looking after the buildings and plant, and during spare time overhauling the few motor vehicles owned by this company for use in the park. A crew of three to four men were engaged during a part of the month at Camp Roosevelt where they built the log walls of the new building to be used as a Council House for the boys' camp unit which is to be established next year. This work was discontinued and the men laid off before the end of December.

VI. PLANS OR PROPOSED WORK:

The park utilities have no plans for prosecution of work in the park during January other than the little already in progress, as indicated above.

Our work will consist of the continuation of the work noted above, which includes, in addition to the routine work of winter, keeping up the plant, the overhauling of property store houses, and hauling coal as it arrives at Gardiner, also taking a physical inventory of property as soon as possible, and putting up the year's supply of ice as soon as it is frozen a sufficient thickness. This work has been belated on account of the warm weather.

VII. POLICIES.

No new policies were adopted during the month.

VIII. COST OF OPERATION.

Cost reports showing expenditures for December will be finished and transmitted at an early date.

IX. OTHER MATTERS OF INTEREST.

Wild Animals.

Fortunately for the park wild animals, the exceptionally splendid weather conditions and abundant supply of natural forage continued throughout the month. The elk found everything they needed in the park and did not go out into Montana, where the laws of the State permitted them to be killed up to include December 24th. Notwithstanding these favorable conditions, however, no chances were taken and the Chief Ranger and several of his best men were constantly on the alert and always prepared to meet any emergency that might suddenly appear. Exceptional

credit is due these men for their extreme effort and care to leave nothing undone to meet any conditions that might arise. The end of December finds the park wild animals, without exception, in the very best of condition, practically all inside of the park, and the losses up to date so small as to be of no consequence. The prospects for a continuance of these conditions throughout the winter appear at the present time to be excellent.

Buffalo, tame herd: Three calves were born in the tame herd during December and are in good condition. This is considerably earlier than the season's calf crop usually begins to come. The cows are in excellent condition, and the prospects for a record breaking number of calves is good. Last year's calves have been kept in the corrals by themselves and fed hay since they were vaccinated on November 5th and 12th. These calves are in good condition and show no ill effects from their vaccination. It has not been necessary to feed hay to the balance of the herd up to date. The older bulls are all still high up in the hills near the Buffalo Ranch. The cows and young bulls fed during December on the range on Specimen Ridge and Hellroaring. They apparently were able to get all the feed they needed and are looking well.

Buffalo, wild herd: No reports of the main herd were received from rangers during the month. Rangers patrolling east of Yellowstone Lake have come in contact with single animals on a few occasions.

Bears: One bear was seen at the garbage pile at Yellowstone Lake Outlet as late as December 8th, but this is quite unusual, and most of them went to sleep for the winter long before that date.

Antelope: Practically all of our antelope are ranging along the north line within a few miles of the northern entrance. Many of them may be seen daily on the cultivated field at the entrance arch, where they congregate for the oats and grass which was left on the field for them, rather than cutting it as has been customary in past years. They are looking in good flesh and so far the losses among them have been very slight.

Deer: Due to an abundance of natural feed and mild weather, the deer are well scattered with the elk along the northern boundary, and about thirty are reported wintering in the Lower Geyser Basin. Chief Ranger McBride estimates that there are not less than 700 mule

deer along the north line, besides quite a number wintering at odd places in the interior of the park. The white-tailed deer are, as usual, but few in number, and what there are winter near headquarters. Montana newspapers indicate that 114 deer were killed in the State during the open hunting season, but such information as we have at hand indicates that only about 40 of these were killed in the country adjacent to the park, and these some distance from the line.

Elk: The handling of our elk herds during the past three months, and more especially during December when they began to get a little uneasy to get across the line, has been a great credit and triumph for our Chief Ranger and the few of his best men whom he had detailed to assist him in this most important work. Possibly it would have been impossible to have attained the same degree of success had the weather been bad and the forage on the range scarce, but it is certain that super-human efforts would have been exerted by these men had it become necessary, for their hearts were in their work and at no time did they relax their constant vigilance and attention to persuade the elk that it was advisable to remain inside of the park during the open hunting season. Their efforts also included the experiment of trying to hold the large herds of elk high up on Slough Creek by the feeding of hay, which was cut there last summer for that purpose. The park line from Gardiner to Slough Creek was kept under constant surveillance, and any large bands of elk that approached too close to the line were persuaded that they were safer if they went in the opposite direction--towards the center of the park. Hay was put out on Slough Creek, and the larger herds of elk were gradually worked towards the hay with the idea of getting them accustomed to remaining in that vicinity during the winter -- or at least during the open hunting season. By the latter part of the month about 4,000 elk were taking this hay. Our best information obtainable indicates that less than a hundred of our park elk were killed on all sides of the park during the entire open hunting season in the adjoining States.

The efforts to hold the elk inside of the park were very successful, and the best information obtainable indicates that only three elk went across the north line during the hunting season and were killed by hunters. So successful were their efforts that all of the rangers who were engaged in this special work were highly elated at the results, and they were much gratified by the expression of appreciation of yourself and Superintendent Albright contained in your telegrams dated December 27th. The rangers who gave their best efforts to this work were given copies of these telegrams. They not only faced hardships and at times even danger, but they worked many long hours, often nearly all night, patrolling on the park line or keeping bonfires burning on the line to scare the elk back during the night.

The general condition of the elk in the park is excellent and reports from all sides are good. About 500 are wintering in the Lower Geyser Basin and the valley of the Firehole and Madison, and the rangers at Gallatin station report that herd as numbering about 2,000, now outside of the park. Natural forage is still abundant, and unless some unforeseen unfortunate conditions arise, the elk will pass a most successful winter. In addition to the large bands on Lamar River, Slough Creek, Blacktail Deer Creek, and Gallatin, scattered bands are reported around Electric Peak, Fawn Pass, Norris, Lake, and Upper Basin.

Mountain Sheep: Reports of our mountain sheep are favorable. No losses were noted during the month, and those seen were in excellent condition with a fair percentage of young with the bands. Due to the mild weather, they are feeding quite high. A band of six were reported as having been seen at a ranch near Gardiner, about a mile outside of the park line, but they came back into the park a little later and were not molested so far as is known.

Moose: Thirty moose were seen in Upper Geyser Basin during December, and a few were reported occasionally by rangers from other parts of the park. They are said to be feeding high. Ranger Scayen, from Upper Yellowstone Station, reports that the bulls in that district began to shed their horns in December.

Carnivora: Coyotes and wolves have been more or less in evidence during the month and it is reported that they have begun to kill elk and deer to some extent. A report that they had begun to hunt in packs and were disturbing the antelope has not yet been confirmed. One antelope was found dead, but it was so badly torn that it was not practicable to determine the cause of death with any certainty. It was impracticable to devote much time to the extermination of coyotes and wolves during the month, as the special care of the elk herds was more important. More attention can possibly be given to this work in the future. A few tracks of mountain lions were seen on Mt. Everts.

Trapping: A careful watch is kept of the few on the various sides of the park who are known to be doing legitimate trapping. Several who contemplated this occupation for the winter have abandoned it for the reason that the price of furs has gone so low that it is doubtful if it would pay. Those who are trapping adjacent to the park have established their trap lines well away from the park borders, and their whereabouts and activities are well known to the rangers of the adjoining park district. So far no signs of depredations inside of the park have been

noted. Of seven trappers who located last fall along the north line, four on Crevice Creek gave it up on December 10th and abandoned their camp after what furs they had accumulated had been stolen. The other three are located on Slough Creek and are not trapping very extensively. Two trappers are located a little outside of the park on the West, north of West Yellowstone. They are local men, well known as reliable men who are trustworthy and who will not encroach upon the park if they had an opportunity. Seven trappers are located in the Upper Yellowstone south-east of the Park and two on Jones Creek. Two of these men have made good catches, the others will probably leave before long as they are not having good luck.

Grazing: Grass is still plentiful on the range inside of the park and the animals are getting sufficient forage for their needs.

Birds.

The usual variety of winter birds were noted. Details of birds observed by the Park Naturalist are given further on in this report, under another heading.

Fishes.

But little fishing was done in the park, as the Gardiner River below the mouth of Boiling River was the only stream open to fishermen where fish would bite in winter.

Seasonal Changes.

The following notes on Seasonal Changes in the park were furnished by Park Naturalist H.P. Skinner.

Botanical: No growth and no changes.

Birds: Bohemian Waxwings reappeared on the 9th and remained until the 20th; golden-eye ducks first appeared along the Gardiner River on the 15th.

The following stayed along the Gardiner River: 100 mallard, 7 green-winged teal, 12 golden-eye, a Wilson snipe, a kingfisher, 3 song sparrows, 75 dippers (or water ousels), and 6 Townsend solitaires. A golden eagle was frequently seen between Mammoth and Gardiner. Near Mammoth were: 40 magpies, 4 nutcrackers, 1 black-headed jay, and 2 Townsend solitaires; with large mixed flocks of gray-crowned, Hepburn, and black leucostictes in the neighborhood.

Animals: The mule deer finished "rutting" on the 8th. They began coming to deer-yards for scraps about the 14th, showing that forage was getting more difficult to get.

The elk were on the plaza at Mammoth pretty steadily, as high as 27 being seen at once. There are now about seven hundred elk ranging within four miles of Mammoth.

Only a half dozen mountain sheep were seen at a time along the Gardiner Canyon, the rest were trading to higher ranges and back again.

Antelope are ranging high on hills west of Gardiner and on lower slopes of Mt. Everts. The proportion of kids is now 20% of the whole number. The new horns now extend four inches down from the top and the prongs are an inch long and can be seen projecting beyond the hair still about the basal half of the horn.

This data is indicative of a warm, open season, but affords no basis for a definite statement as to just how many days late it is as compared with average.

Arrests and Violations of Law.

No evidence of violation of law was found any where in the park during the month and no arrests were made.

*slower
also Jan 14*
The trial of Murray Baum, of Felt, Idaho, arrested on November 30, 1920, for killing an elk in the southwest corner of the park, occurred before the United States Commissioner, at Mammoth Hot Springs, on December 3rd. The details were reported last month.

Forest Fires.

There is no danger of forest fires in the park at this season of the year.

Accidents and Casualties.

Ranger Peter Lawson slipped and fell upon an upturned elk horn at the Hellroaring Creek Cabin on December 23rd. He sustained a rather deep and painful flesh wound, which was very sore by the time he had ridden all the way in to Headquarters next day. He was sent to Chico Hot Springs, the nearest point where hospital service is available, on December 24th. The doctor has permitted him to return home, but he will be unable to return to duty for several days.

Mrs. Marshall, wife of one of our automobile mechanics, died at her home in Meadville, Pa., on December 13th, from tubercular trouble. Mrs. Marshall was removed

from her home here to the hospital at Chico Hot Springs in November, during a severe attack of a lingering disease. She left Chico on December 9th and reached home just before she died.

Births.

A son was born to Mr. and Mrs. A.C. Neumann, on December 4th, at a maternity hospital in Livingston, Montana. Mr. Neumann is our master painter.

Medical Service.

Doctor W.E. Crawbuck, who resides in the park and furnishes medical service to park employees under a special arrangement, went east on leave on December 9th and has not yet returned. During his absence the nearest place where medical attention can be had is Chico Hot Springs.

Natural Phenomena.

The following report on changes in natural phenomena at Mammoth Springs is submitted by Park Naturalist H.P. Skinner, from his own observation:

At Mammoth Hot Springs: There is, perhaps, a little less water flowing down Jupiter Terrace than usual, although more than during last summer. A few feet to the south is another spring that is slowly getting more and more powerful and supplies more water to the extreme southern part of Jupiter Terrace. To the west of the main spring of Jupiter Terrace, Blue Spring, a new spring is rebuilding the old Marble Terrace and is becoming more active. Probably these three springs are all using the water that formerly went to Blue Spring alone and the total activity is more than average formerly for Blue Spring alone. The lower part of Angel Terrace is almost dry and the beautiful pink color of last summer is nearly gone; but the upper part that use to be active five years ago has become active again and is recoloring its terrace. The White Elephant shows the usual amount of activity, but is becoming so highly colored by algae that the name "White" is no longer appropriate. The big mound at Orange Spring is drying up, but the small cone farther east is becoming very lively and a number of openings still farther east but still connected to Orange Spring have appeared. Narrows Gauge Terrace is normal. Minerva Terrace is almost completely dry. Mound Terrace is about normal and as highly colored as usual. Cleopatra Terrace is normal and seems even more highly colored than usual. The Palette Spring is about the same as for the last three years. A little more water seems to be

coming from Hymen Terrace, the color becoming better, and the algaous growth is still as remarkable as ever. Two or three openings that began discharging water last summer have ceased their activity. To sum up, the total activity of the whole is at least up to average and the coloring, except at Angel Terrace, is more beautiful than ever.

Special Annual Report on Natural History Research.

Park Naturalist H.P. Skinner submits the following report on the amount of work he has done throughout the year ended December 31, 1920, in the line of Natural History Research:

- Geological:** As a preliminary to a geological survey of the whole Park preparatory to a popular geological account, the valley north of the Park was surveyed north to Livingston, and the notes obtained were worked up into readable form.
- Botanical:** 107 species of flowers and trees were observed and 532 notes thereon collected and tabulated for future use.
- Birds:** 33,504 birds were noted and life-history notes to the number of 433 thereon collected and tabulated for future use. Notes on 52 species written up into detailed life-histories ready for publication.
- Animals:** Besides the 18 mountain sheep, 300 antelope, 5,000 elk, and 250 mule deer are seen almost constantly during the winter near Mammoth and Gardiner; 3,382 animals were noted and 339 life-history notes were collected.
- Amphibians:** 3 notes were recorded.
- Insects:** 4 notes were recorded.
- Reptiles:** 3 notes were recorded.

In addition to the above, 362 pages of manuscript copy were prepared and 17 articles on various scientific subjects were published.

Special Visitors.

Mr. Karl C. Rupert, formerly Observer in Charge of the Local U.S. Weather Bureau in the park, visited us December 17-18.

Mr. E.C. Moorman, Treasurer of the Yellowstone Park Camps Company, of Livingston, Montana, visited the park officially December 28-29.

Motion Pictures.

Mr. Frederick A. Todd, of the Todd Film Company, 34 South Main Street, Salt Lake City, Utah, visited the park December 18th to 20th and took a few motion pictures of hot springs and wild animals in the vicinity of Mammoth Hot Springs and Gardiner, under permit dated June 17, 1920.

Miscellaneous.

Immounded Stock: The six head of cattle reported in October and November were sold at public auction, to the highest bidder, at Park Headquarters, on December 1, 1920, by your direction, and a special report was made. The cattle were in excellent condition and the sale was quite successful, the animals bringing top prices and probably more than they would have brought in the Chicago market, which was quite dull at that time. The sale netted a total of \$235.00, which was placed in a separate fund to be held for a period of six months, as provided by law.

*Return
made June
14, 1921
LCH*

A stray horse was taken up by the rangers at Lake Station, between Lake and Thumb Stations. As the snow is too deep to admit of taking this animal in to Headquarters, it will be fed at the station and turned in next spring for action under the park regulations.

Entertainments: Moving picture shows were held in the Post Exchange auditorium by park employees twice during the month.

Religious Services: Church services were held in the Government Chapel at Headquarters by Rev. J.F. Pritchard, of Emigrant, Montana, on December 26th, both morning and evening.

Copies of your letter, dated December 21, 1920, to Superintendent Albright, extending to him and his organization wishes for a Merry Christmas and a Happy New Year, were made and presented to each member of the force.

X. RECEIPTS AND REMITTANCES:

A report of moneys due, collected, and transmitted, together with money orders and checks listed below, totaling \$20.05, as shown by the report, are enclosed. Acknowledgment of receipt is requested.

Check.

<u>Date.</u>	<u>No.</u>		
12-20	- 665	Yellowstone Park Camps Co.,	\$16.30

Postal Money Order.

<u>Date</u>	<u>Serial No.</u>	<u>Office</u>	<u>Remitter</u>	<u>Amount</u>
12-14-20	45996	Yellowstone Park,	Geo. Whittaker,	\$3.75.
Total remittance,				\$20.05

Cordially yours,

Chester A. Lindsley,
Acting Superintendent.

The Director,
National Park Service,
Department of the Interior,
Washington, D.C.

Enclosures.

CAL:CH

Painter's Report for Month of December, 1920.

1. Mr. Lindsley's Quarters, Painting storm shelter 4 hrs.
1. Rodgers' Quarters Bldg. or New Bachelor Bldg. 4 hrs.
2. Kray's Quarters, Painting, calcimining, etc.
3. " " " " " " " "
4. Bachelor Bldg 4 hrs, Neumann's Sts. 4 hrs.

5. Mr. Brider Quarters, 8 hrs. Painting, varnishing etc.

6. " " " 4 hrs. " "

7. Bowling Alley. Helping put alleys into shape

On leave.

- " " " "
Harry Trischman's Quarters 8 hrs. Plastering
" " " 7 hrs. Repair storm window 1 hr.
" " " 8 hrs. Paperhanging
" " " 5 hrs. Painting

Mr. Brider Quarters 3 hrs. painting stairway.

- Harry Trischman's Quarters 8 hrs. Paperhanging
" " " 4 hrs. Neumann's Quarters 4 hrs.
" " " 8 hrs. Painting
" " " 8 hrs. Calcimining
" " " 4 hrs. Allen's Quarters 4 hrs.

On leave

- " " " "
Trischman's Sts 4 hrs. Gas tanks 2 hrs.
" " " 4 hrs. Neumann's Quarters 4 hrs.
Bachelor Bldg. 2 hrs. Shop 6 hrs. Cleaning Shop
On leave
" " " "

August C. Neumann

DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

YELLOWSTONE NATIONAL PARK

YELLOWSTONE PARK, WYO.

CE OF THE SUPERINTENDENT

January 1, 1921.

REPORT ON INFORMATION SERVICE.

To: Chester A. Lindsley, Acting Superintendent.

From: M.P. Skinner, Park Naturalist.

Fifteen letters were prepared and sent out in answer to questions of a technical character, and much research work was done in preparation for the coming season.

DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

YELLOWSTONE NATIONAL PARK

YELLOWSTONE PARK, WYO.

CE OF THE SUPERINTENDENT

January 1, 1921.

ANNUAL REPORT ON NATURAL HISTORY RESEARCH.

To: Chester A. Lindsley, Acting Superintendent.

From: M.P. Skinner, Park Naturalist.

Geological: As a preliminary to a geological survey of the whole Park preparatory to a popular geological account, the valley north of the Park was surveyed north to Livingston and the notes obtained were worked up into readable form.

Botanical; 107 species of flowers and trees were observed and 532 notes thereon collected and tabulated for future use.

Birds: 33504 birds were noted and life-history notes to the number of 433 thereon collected and tabulated for future use. Notes on 52 species written up into detailed life-histories ready for publication.

Animals: Besides the 18 mountain sheep, 300 antelope, 5000 elk, and 250 mule deer seen almost constantly during the winter near Mammoth and Gardiner; 3382 animals were noted and 339 life-history notes were collected.

Amphibians: 3 notes were recorded.

Insects: 4 notes were recorded.

Reptiles: 3 notes were recorded.

In addition to the above, 362 pages of manuscript copy were prepared and 17 articles on various scientific subjects were published.

DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

YELLOWSTONE NATIONAL PARK

YELLOWSTONE PARK, WYO.

CE OF THE SUPERINTENDENT

January 1, 1921.

REPORT ON NATURAL PHENOMENA.

To: Chester A. Lindsley, Acting Superintendent.

From: M.P. Skinner, Park Naturalist.

At Mammoth Hot Springs: There is, perhaps, a little less water flowing down Jupiter Terrace than usual, although more than during last summer. A few feet to the south is another spring than is slowly getting more and more powerful and supplies more water to the extreme southern part of Jupiter Terrace. To the west of the main spring of Jupiter Terrace, Blue Spring, a new spring is rebuilding the old Marble Terrace and is becoming more active. Probably these three springs are all using the water that formerly went to Blue Spring alone and the total activity is more than average formerly for Blue Spring alone. The lower part of Angel Terrace is almost dry and the beautiful pink color of last summer is nearly gone; but the upper part that use to be active five years ago has become active again and is recoloring its terrace. The White Elephant shows the usual amount of activity but is becoming so highly colored by algae that the name "White" is no longer appropriate. The big mound at Orange Spring is drying up, but the small cone farther east is becoming very lively and a number of openings still farther east but still connected to Orange Spring have appeared. Narrow Guage Terrace is normal. Minerva Terrace is almost completely dry. Mound Terrace is about normal and as highly colored as usual. Cleopatra Terrace is normal and seems even more highly colored than usual. The Palette Spring is about the same as for the last three years. A little more water seems to be coming from Hymen Terrace, the color becoming better, and the algaous growth is still as remarkable as ever. Two or three openings that began discharging water last summer have ceased their activity. To sum up, the total activity of the whole is at least up to average and the coloring except at Angel Terrace is more beautiful than ever.

down from the tip and the prongs are an inch long and can be seen projecting beyond the hair still about the basal half of the horn.

This data is indicative of a warm, open season; but affords no basis for a definite statement as to just how many days late it is as compared with average.

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JAN 7

1921

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PARK, WYO.

DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

YELLOWSTONE NATIONAL PARK

YELLOWSTONE PARK, WYO.

ICE OF THE SUPERINTENDENT

January 1, 1920.

REPORT ON SEASONAL CHANGES.

To: Chester A. Lindsley, Asst. Supt.

From: M.P. Skinner, Park Naturalist.

Botanical: No growth and no changes.

Birds: Bohemian Waxwings reappeared on the 9th and remained until the 20th; golden-eye ducks first appeared along the Gardiner River on the 15th.

The following staid along the Gardiner River: 100 mallard, 7 green-winged teal, 12 golden-eye, a Wilson snipe, a kingfisher, 3 song sparrows, 75 dippers (or water ousels), and 6 Townsend solitaires. A golden eagle was frequently seen between Mammoth and Gardiner. Near Mammoth were: 40 magpies, 4 nutcrackers, 1 black-headed jay, and 2 Townsend solitaires; with large mixed flocks of gray-crowned, Hepburn, and black leucostictes in the neighborhood.

Animals: The mule deer finished "rutting" on the 8th. They began coming to door-yards for scraps about the 14th, showing that forage was getting more difficult to get.

The elk were on the plaza at Mammoth pretty steadily, as high as 27 being seen at once. There are now about seven hundred elk ranging within four miles of Mammoth.

Only a half dozen mountain sheep were seen at a time along the Gardiner Canyon, the rest were trading to higher ranges and back again.

Antelope are ranging high on hills west of Gardiner and on lower slopes of Mt Everts. The proportion of kids is now 20% of the whole number. The new horns now extend four inches

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